

## Aesthetic Reconstruction with Gingival Depigmentation

### Rekonstruksi Estetika dengan Depigmentasi Gingiva

Liana Zulfa, Syarafina

Department of Periodontology,  
YARSI Dental Hospital, Jakarta, Indonesia  
Jl. Letjend Soepranto kav 13, Jakarta Pusat, 10510, Jakarta, Indonesia  
E-mail: liana80@yahoo.com

---

#### Abstract

Currently, there is an increase in the demand for aesthetics, which includes the need for a beautiful appearance. Gingival hyperpigmentation is an extremely disturbing aesthetic problem caused by melanin deposition of melanocytes in the basal and suprabasal layers of the epithelium. The color of the pigment can range from pale to dark brown or black, depending on the amount and distribution in the tissue. Gingival depigmentation therapy is a periodontal plastic surgery method that can provide patients with good outcomes. A 21-year-old female complained of having brown front gums and an unsettling appearance. The patient does not smoke, has allergies to drugs and food, or suffers from systemic disease. The depigmentation process was conducted using number 15 scalpels, and the gingival contour was created before irrigation utilizing Kirkland. Furthermore, a periodontal pack was used to cover the surgical site, and there were no complaints during the postoperative follow-up visit.

**Keywords:** aesthetic reconstruction, gingival depigmentation, scalpel surgical technique

#### Abstrak

Kebutuhan akan estetika saat ini semakin tinggi termasuk juga kebutuhan penampilan yang melibatkan senyum yang menarik. Hiperpigmentasi gingiva merupakan salah satu masalah yang cukup mengganggu estetika. Hiperpigmentasi pada gingiva disebabkan karena adanya deposisi melanin oleh melanosit terutama pada lapisan basal dan suprabasal epitelium dengan warna pigmen melanin yang bervariasi dari terang ke gelap berupa warna coklat atau hitam, tergantung jumlah dan distribusi melanin yang terdapat dalam jaringan. Perawatan depigmentasi gingiva merupakan prosedur bedah plastik periodontal yang dapat memberikan hasil memuaskan bagi pasien. Pasien perempuan berusia 21 tahun datang dengan keluhan gusi depan berwarna coklat dan mengganggu penampilannya sehingga pasien menjadi tidak percaya diri. Pasien mengaku tidak merokok, tidak memiliki alergi terhadap obat dan makanan serta tidak memiliki penyakit sistemik. Depigmentasi dilakukan dengan menggunakan skalpel nomor 15 diikuti dengan pembentukan kontur gingiva menggunakan Kirkland, kemudian daerah operasi ditutup dengan *periodontal pack* setelah dilakukan irigasi. Hasil penyembuhan terlihat baik saat kunjungan kontrol pasca operasi tanpa adanya keluhan dari pasien.

**Kata kunci:** rekonstruksi estetika, depigmentasi gingiva, teknik bedah skalpel

---

#### INTRODUCTION

Professional dentists are needed today because of the increasing need for treatment with aesthetic goals. One of the aesthetic needs is for the gingiva to be the correct color and shape. Gingival hyperpigmentation is a condition that regularly emerges and detracts from aesthetics, particularly in those with pronounced smile lines (Gummy Smile).<sup>1</sup> The ante-

rior region and the labial gingival are pigmentation's most frequently affected areas. Even though melanin pigmentation is not a medical issue, patients frequently remark that the dark tint affects appearance.<sup>2</sup>

The main indication for depigmentation therapy is a person's request to improve aesthetics. Gingival hyperpigmentation can occur in the keratinized mucosa

of all races.<sup>1</sup> Melanin, melanoid, oxyhemoglobin, carotene, and other pigments of bilirubin and iron form the majority of the critical pigments contributing to the standard color of the oral mucosa. Furthermore, oral pigmentation can have multiple physiological, pathological, or multifactorial origins.<sup>3</sup>

A periodontal surgical procedure called gingival ablation is used to remove and diminish pigmentation. Before using this approach, it is crucial to consider the skin tone of the patient, the periodontal condition, treatment, and the gingival thickness. The sole goal of aesthetic therapy in non-pathological settings is to enhance appearance.<sup>4</sup>

## CASE REPORT

A 21-year-old female patient came to YARSI Dental Hospital complaining of brown coloration of the front gums that interfered with her appearance. The patient brushes the teeth twice a day and does not smoke. Furthermore, she does not have drug and food allergies and was not taking medication.

Intraoral examination showed the presence of pigmentation of the maxillary gingiva in regions 13-23 with a working diagnosis of hyperpigmentation. According to the Classification of Melanin Index, this pigmentation was classed with a score of 4 as a continuous ribbon that covered the whole space between the canines. The treatment plan will be conducted as gingival depigmentation using Scalpel Surgical Technique.

## CASE MANAGEMENT

The entire procedure was explained to the patient, and written consent was obtained. Oral prophylaxis was conducted before the surgery, and asepsis was circularly provided with povidone-iodine. Local anesthesia infiltrated the maxillary anterior region from the canine to the area.

Depigmentation was performed using blade no.15, followed by the formation of gingival contours using Kirkland from region 11, extending to 13, 21, and 23. Furthermore, irrigation was carried out with povidone-iodine and NaCl, and the surgical wound was closed with a periodontal dressing. The patient was given medication, including Amoxicillin 500mg (for 5 days), Mefenamic Acid 500mg, and Tantum Verde.

## RESULTS

Patients were instructed to follow up 1 week post-operatively and remove the periodontal pack. An examination of the condition of the gingiva around

the postoperative area was carried out, and the gingival color was still hyperemic in the healing process. The healing process was accurately conducted without complaints. The condition of the gingiva in regions 13-23 is good, with a color similar to the surrounding mucosa at 2 weeks of control.

## DISCUSSIONS

The normal gingival color is salmon coral pink,<sup>5</sup> and when pigmentation occurs, a diffuse purplish discoloration occurs as irregular brown patches of light brown, black, striae, or strands.<sup>6</sup> Pigmentation is a condition of the melanin pigment that has a role in endogenous coloring, as seen in the skin, mucosa, hair, eyes, and parts of the human brain. In the oral cavity, it is known as oral pigmentation, which is a change in the color of the oral mucosa or gingiva associated with exogenous and endogenous factors. Smoking habits and exposure to heavy metals are examples of exogenous variables. Meanwhile, endocrine and genetic illnesses are examples of endogenous influences.<sup>1</sup>

The melanin pigment in the mucosa protects from the negative effects of ultraviolet radiation. Exposure to ultraviolet light can cause the melanin pigment to increase in number. Excessive pigment by melanocyte cells in the gingival tissue causes gingival hyperpigmentation. Depending on the amount and distribution in the tissue, the color of the pigment can range from light to dark brown or black.<sup>3,7</sup>

In this case report, a 21-year-old female patient has brown oral pigmentation in the maxillary gingiva in regions 13-23, interfering with the appearance and lowering the self-confidence. There were no exogenous factors since the patient does not have a smoking habit.

Melanin is responsible for normal physiology in the oral cavity and is primarily found in the gingiva, hard palate, mucosa, and tongue. The shape can be diffuse, dense, or irregular (spotted or macular), with different colors ranging from light brown to black. The production by melanocytes, particularly in the basal and suprabasal layers of the epithelium, results in gingival hyperpigmentation. Melanin-based hyperpigmentation, known as a smoker's melanosis, is physiological and linked to smoking. Exposure to cigarette smoke in children is associated with this process, and high levels of melanin can also be found in several races in Africa and East Asia.<sup>1</sup>

Gingival hyperpigmentation has long been observed in all races and is most commonly seen in keratinized mucosa of the anterior and labio-gingival areas. Even though melanin pigmentation is not a medical issue biologically, the black gingival color

detracts from their overall appearance, particularly those with prominent smile lines.<sup>1</sup>

There are two types of pigmentation etiology, namely endogenous and exogenous. Endogenous pigmentation can be caused by melanin, bilirubin, or iron. Oral pigmentation caused by melanin can be normal and often found in certain races. The increase in melanin can cause Addison's disease, Peutz-Jeghers syndrome, Albright syndrome, and von Recklinghausen's disease. Endogenous pigmentation includes racial or physiological pigmentation, as well as pathologies such as Peutz-Jeghers syndrome, Addison's disease, Kaposi sarcoma, post-inflammatory pigmentation, Smoker's melanosis, pigmentation nevi, oral melanoacanthoma, oral melanoma, HIV infection, Laugier Hunziker syndrome, Angiosarcoma, Ecchymosis, Haemochromatosis, Petechiae, Hereditary Hemorrhagic Telangiectasia (HHT), Hemangioma and Vascular Malformation. Meanwhile, exogenous pigmentation is caused by metal, coal, or food coloring factories. Drug associated with oral mucosal pigmentation includes exogenous pigmentation, such as zidovudine, ketoconazole, or clofazimine. The drug zidovudine can also occur on the skin and nails with another exogenous staining, such as the Graphite tattoo and Amalgam tattoo.<sup>8</sup>

The melanin granules that the melanoblasts create cause the gingiva to become discolored. Melanin is a non-hemoglobin-derived brown pigment created by melanocytes in the epithelium's basal and suprabasal cell layers. Furthermore, the gingiva is thought to be the oral cavity's most often pigmented tissue.<sup>8</sup>

The three stages of the process are melanocyte activation, melanin production, and expression. The activation phase begins, synthesizing chemical messengers such as a melanocyte-stimulating hormone when the melanocytes are triggered. Melanocytes create melanosome granules during the synthesis phase. These granules are moved from melanocytes to keratinocytes, which are skin cells situated in the epidermis during the expression phase.<sup>3</sup>

Pigmentation can be ranked according to Hedin with the Classification of Melanin Index in several categories. A score of 0 represents a pigment-free condition, while 1 denotes the presence of one or two solitary units of pigmentation in papillary gingiva without forming a continuous ribbon between solitary units. A gingival papilla receives a score of 2 when there are more than three units of pigmentation without creating a continuous ribbon. Furthermore, score 3 represents one or more short continuous ribbons of pigmentation. A noticeable continuous ribbon including the entire area between canines is a score of 4.<sup>9</sup>

A periodontal plastic surgery operation called gingival depigmentation eliminates hyperpigmentation to improve aesthetic value.<sup>10</sup> In this case report, treatment of depigmentation is carried out by Scalpel Surgical Technique using blade no.15.

The scalpel surgical technique removes the pigmented gingival epithelium and the connective tissue. This is the most economical and recommended technique for clinics without enough equipment. Concerning the advantage, the operator can control the depth of reepithelialization, which other techniques cannot easily obtain. The healing process is faster than other techniques, but the surgery results in bleeding, necessitating the application of a periodontal dressing for 7 to 10 days.<sup>1,11,12</sup>

Gingival depigmentation takes a long time, and bleeding can occur during surgery, making the process difficult. The gingival collar should also be maintained to avoid a gingival recession.<sup>12,13</sup>

The scalpel surgical technique can correct gingival hyperpigmentation and is very satisfactory for the patient. The drawback of using this tool is that there is much bleeding. Therefore, operator skills and patient cooperation are needed in maintaining oral hygiene during the healing process. It is also necessary to talk to the patient about the possibility of recurrence (repigmentation).<sup>14,15</sup>

The removal of the melanin pigmentation of the gingiva should be conducted carefully to prevent exposure to the alveolar bone. Inadequate treatment performance may result in gingival recession, periosteal and alveolar bone injury, and slow wound healing.<sup>16</sup>

The patient received Mefenamic acid 500 mg daily for five days and Amoxicillin 500 mg for post-gingival depigmentation. Hot and spicy foods were also avoided and were refrained from brushing the treated gingival area temporarily. A week after the surgery, the patient had to see the periodontist to control the periodontal pack removal and postoperative monitoring. During the healing, mouthwash was also encouraged after removing the periodontal pack.

In conclusion, the gingival depigmentation method using a scalpel to eliminate the epithelial layer to the pigmented layer has good and satisfactory results for the patient, but the drawback is severe bleeding. Therefore, precision and operator experience are needed to avoid excessive epithelial removal and cooperation in maintaining oral hygiene during the healing process.

## ACKNOWLEDGEMENTS

The authors are grateful to the patient for agreeing to participate in this case report.

## FIGURES



Figure 1. Gingival hyperpigmentation



Figure 2. Gingival depigmentation using a scalpel



Figure 3. Contouring the gingiva using Kirkland



Figure 4. After depigmentation



Figure 5. Periodontal pack application



Figure 6. Control 1 week after surgery



Figure 7. Control 2 weeks after surgery



Figure 8. Before and after gingival depigmentation

## REFERENCES

1. Ryan M, Krismariono A. Gingival scraping untuk depigmentasi gingiva. *Maj Kedokt Gigi Klin* 2018; 2; 1-5.
2. Almas K, Sadig W. Surgical treatment of melanin-pigmented gingiva: an esthetic approach. *IJDR* 2015; 13(2); 70-3.
3. Alshoubaki RE, Alzahrani AS. Outcomes of gingival depigmentation among smokers and non-smokers: a comparative study. *Int J Pharm Res Allied Sci* 2018; 7(1); 148-55.
4. Bhatia G, Kumar A, Khatri M, Bansal M, Saxena S. Assessment of the width of attached gingiva using different methods in various age groups : a clinical study. *J Indian Soc Periodontol* 2015; 19(2); 199-202.
5. Reddy S. Essential of clinical periodontology and periodontics. In: *Essential of Clinical Periodontology and Periodontics*. 5<sup>th</sup> ed. India: Jaypee Brothers Medical Publisher, 2018.
6. Shahna N, Suchetha A, Sapna N, Darshan B, Apoorva SN. Gingival pigmentation : a review of literature. *Int J App Dent Sci* 2019; 5(2); 83-91.
7. Rosa DSA, Aranha ACC, Eduardo CDP, Aoki A. Esthetic treatment of gingival melanin hyperpigmentation with er:yag laser: short-term clinical observations and patient follow-up. *J Periodontol* 2007; 78(10); 2018-25.
8. Rosa HS, Josephine H, Wijayanti I, Anggara R. Penatalaksanaan depigmentasi gingiva fisiologis dengan teknik sederhana. *J Kedokt Gigi Terpadu* 2020; 2; 1-7.
9. Mani A, Mani S, Shah S, Thorat V. Management of gingival hyperpigmentation using surgical blade, diamond bur and diode laser therapy: a case report. *J Oral Laser Appl* 2009; 9(4); 227-32.
10. Prasad SSV, Agrawal N, Reddy NR. Gingival depigmentation : A case report. *People's J Sci Res* 2010; 3(15); 27-30.
11. Moneim RAA, Deeb ME, Rabea AA. Gingival pigmentation (cause, treatment and

- histological preview). *Futur Dent J* 2017; 3(1); 1-7.
12. Kode S, Kamble P, Apon A, Pimpale S. Depigmentation using popular and economical techniques - a case series. *Acta Sci Dent Sci* 2018; 2(9); 105-7.
  13. Abdelmagyd HAE, Al-Ahmari MMM, Shetty SR. Treatment of gingival hyperpigmentation using different techniques. *J Datta Meghe Inst Med Sci Univ* 2019; 14(1); 50-5.
  14. Ismail AKA, Lastianny SP. Penatalaksanaan hiperpigmentasi gingiva dan mahkota gigi klinis pendek dengan surgical scalpel technique pada gigi anterior. *Maj Kedokt Gigi Indones* 2011; 18(1); 35.
  15. Sutandy H, Oktawati S. Periodontal estetik: perawatan depigmentasi gingiva dengan kombinasi alat kauter dan pisau bedah (laporan kasus). *Makassar Dent J* 2017; 6(3); 127-31.
  16. Ishikawa I, Sasaki KM, Aoki A, Watanabe H. Effects of Er:YAG laser on periodontal therapy. *J Int Acad Periodontol* 2003; 5(1); 23-8.